

Supplemental Material

Contrasts in Oxidative Potential and Other PM Characteristics Collected Near Major Streets and Background Locations

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Supplemental Material, Table 1 Exact air sampling schedule

Cities	Location	MEASUREMENT WEEK ^a												Sample round A
		1	2	3	4	5 ^b	6 ^b	7	8	9 ^b	10 ^b	11	12	
Amsterdam	Haarlemmerweg	X			X		X		X		X		X	Sample round A
	Hoofdweg	X			X		X		X		X		X	
	Urban background	X			X		X		X		X		X	
	Suburban background	X			X		X		X		X		X	
	Stille Veerkade	X			X		X		X		X		X	
	Urban background	X			X		X		X		X		X	
The Hague	Suburban background	X			X		X		X		X		X	Sample round A
Den Bosch	Brugstraat		X	X		X		X		X		X		Sample round A
	Koningsweg		X	X		X		X		X		X		
	Urban background		X	X		X		X		X		X		
	Suburban background		X	X		X		X		X		X		
Tilburg	HVB		X	X		X		X		X		X		Sample round B
	Urban background		X	X		X		X		X		X		
	Suburban background		X	X		X		X		X		X		
Utrecht	Vleutenseweg		X	X		X		X		X		X		Sample round B
	Weerdsingel		X	X		X		X		X		X		
	Urban background		X	X		X		X		X		X		
	Suburban background		X	X		X		X		X		X		
	Central reference	X	X	X	X	X	X	X	X	X	X	X	X	

^aMeasurement performed in 2008 and beginning of 2009; Measurement week 1: June 12 – June 19; Measurement week 2: June 24 – July 01; Measurement week 3: Sept. 1 – Sept. 08; Measurement week 4: Sept. 11 – Sept. 18; Measurement week 5: Sept. 29 – Oct. 06; Measurement week 6: Oct. 30 – Nov. 06; Measurement week 7: Nov. 10 – Nov. 17; Measurement week 8: Nov. 20 – Nov. 27.; Measurement week 9: Dec. 01 – Dec. 08; Measurement week 10: Dec. 11 – Dec. 18; Measurement week 11: Jan. 12 – Jan. 19; Measurement week 12: Jan. 22 – Jan. 29;

^bIn these measurement weeks oxidative potential of PM_{2.5} was also estimated (subset).

Supplemental Material, Table 2 Detailed characteristics of the different urban streets

Cities	Urban streets	Traffic intensity ^a	Fraction ^b		Speed (km/h)		Road type	Distance to road axis (m)
		per 24-h	Middle	Heavy	Per 24-h	In rush hours		
Amsterdam	Haarlemmerweg	15 253	0.03	0.02	41	38	Adjoining buildings on one side	11
Amsterdam	Hoofdweg	9774	0.01	0.06	41	41	Adjoining buildings on two sides	16
The Hague	Stille Veerkade	17 438	0.05	0.02	34	32	Canyon ^c	11
Den Bosch	Brugstraat	17 896	0.05	0.05	32	28	Canyon ^c	9
Den Bosch	Koningsweg	17 138	0.05	0.03	46	39	Adjoining buildings on two sides	14
Tilburg	HVB	18 812	0.03	0.07	51	49	Adjoining buildings on two sides	12
Utrecht	Vleutenseweg	13 553	0.06	0.05	39	36	Adjoining buildings on two sides	15
Utrecht	Weerdsingel Wz	14 831	0.06	0.03	35	31	Adjoining buildings on one side	9

^aTotal motorized vehicles per 24-h.

^bFraction of traffic intensity. Middle traffic characterized as traffic with a distance between the wheel axes of 3.5 to 7 m.

^cNarrow street with adjoining buildings on two sides. Distance between façade and road axis is smaller than 1.5 times the height of the buildings.

Supplemental Material, Table 3 Median ratios streets and urban background locations vs suburban background locations

Cities	Streets and urban background locations	·OH
Amsterdam	Haarlemmerweg	11.6
Amsterdam	Hoofdweg	4.2
Amsterdam	Urban background	1.8
The Hague	Stille Veerkade	8.7
The Hague	Urban background	2.1
Den Bosch	Brugstraat	11.6
Den Bosch	Koningsweg	8.2
Den Bosch	Urban background	3.1
Tilburg	HVB	5.3
Tilburg	Urban background	1.5
Utrecht	Vleutenseweg	2.2
Utrecht	Weerdsingel Wz	6.1
Utrecht	Urban background	1.6
Overall ratio streets		6.5
P-value		<0.0001
Overall ratio urban background		1.8
P-value		<0.0001

Supplemental Material, Table 4 Relation between oxidative potential and other PM characteristics^a - Results of mixed model analysis

	IQR ^b	Beta ^c	Standard error	P-value	AIC ^d
One-pollutant model					
PM ₁₀	13	-0.0100	0.0068	0.0867	232.7
PM _{2.5}	14	-0.0100	0.0072	0.1235	220.8
'Soot'	1.4	0.2600	0.0717	0.0005	220.7
Ba	9	0.0241	0.0105	0.0235	229.9
Cu	22	0.0368	0.0040	<0.0001	198.6
Cr	3	0.0734	0.0299	0.0163	227.8
Fe	471	0.0012	0.0002	<0.0001	226.1
Mn	7	0.0066	0.0126	0.6016	234.1
S	834	-0.0002	0.0001	0.0132	237.9
Two-pollutant model					
Intercept		9.2829	0.1654		181.8
Cu	22	0.0462	0.0040	<0.0001	
PM ₁₀	13	-0.0335	0.0063	<0.0001	

^aPM₁₀ and PM_{2.5} in µg/m³; Elemental concentrations from PM₁₀ filters in ng/m³.

'soot' in 10⁻⁵m⁻¹. The logarithm of the PM₁₀ oxidative potential was used as dependant variable.

^bIQR = Inter quartile range

^cTo estimate percentage change per IQR of a pollutant the following formula can be used: ((e^{IQR*beta}) -1)*100.

^dAIC = Akaike information criterion (the lower, the better model fit)